ASSESSORS' HANDBOOK
SECTION 530

ESTIMATING RCNLD
(REPLACEMENT COST NEW LESS DEPRECIATION)

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FOREWORD

This publication contains the basic principles of building cost estimating. It is intended as an aid in the instruction of beginning appraisers in residential, commercial, and industrial building cost estimating.

It is printed in loose-leaf form to facilitate making future additions or revisions. We hope that this format will enable each county to amend this text to suit their individual needs and desires. We would like to encourage each assessor to build from this publication a manual that is best suited to his locality.

As time permits, we hope to issue additional sections on such subjects as the Commercial Building Record, the Service Station Record, and the Industrial Building Record in the future.

This handbook was written by the staff of the Assessment Standards Division and was subsequently reviewed by the Standards Committee of the State Association of County Assessors.

If you have any questions, comments, or suggestions concerning this publication we will appreciate hearing them.

Jack F. Eisenlauer, Chief
Assessment Standards Division

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION

Property tax appraisers are able to arrive quickly at reasonably accurate and uniform estimates of value for most property by following standard references and procedures suited to this task. General appraisal principles and procedures, including a section on the cost approach to value, may be found in AH 501, *The General Appraisal Manual* (October 1968). This publication discusses procedures for estimating the replacement cost new less depreciation of buildings. Included are the following:

- Replacement cost
- Methods of cost estimating
- Standard classification system
- Square-foot cost adjustments
- Depreciation
- Residential building record

Procedures and comments specifically applicable to individual building types may be found in the following building cost manuals published by the State Board of Equalization:

- AH 531, *Residential Building Costs*
- AH 532, *Commercial Building Costs* (withdrawn—1996)
- AH 533, *Industrial Building Costs and Building Cost Indices* (withdrawn—1996)
- AH 534, *Rural Building Costs*

The procedures described here are suggestions to be adopted in a manner that best suits the character of each county. A loose-leaf form was used to facilitate making future additions or revisions.

CHAPTER 2: REPLACEMENT COST

DEFINITION

The term "replacement cost" should be distinguished from both historical cost and reproduction cost. Historical cost is the actual cost incurred in the construction of a building. Reproduction cost is the current cost of duplicating a structure identical in physical details and using the same or similar materials.

Replacement cost is the cost, as of a particular date, of replacing an existing structure with a similar one that has equivalent utility. A structure of equivalent utility is one with the power of satisfying comparable wants. Therefore, replacement cost is the fair composite cost at the time of appraisal of replacing an improvement with one having the same or similar qualities and conveniences, rather than the actual cost under circumstances prevailing at the same time of construction. In estimating replacement cost, proper consideration must be given to changes in design and material, and to the relative quality of the materials and workmanship. Obsolete features that do not contribute to present-day desirability or to value should be largely disregarded.

Replacement cost and reproduction cost are usually the same. They may not be, however, when a substitute building having equal utility is less costly. Modern and efficient construction methods, such as tilt-up construction, may result in lower replacement costs. Designs that eliminate functionally obsolete features may also result in decreases in the cost of an equally desirable substitute property.

Historical costs usually differ from replacement costs. Improved designs and methods of construction as well as changes in price levels cause replacement cost to differ from historical cost.

COMPOSITION OF REPLACEMENT COST

Replacement cost includes all outlays necessary to place a building or other improvement in the hands of the typical user or owner. These outlays include:

- Excavation for foundations, piers, and other structural foundation components, assuming a level site
- Materials
- Labor
- Architect's fees
- Engineer's fees
- Supervision

- Permits
- Normal utility hook-ups
- Overhead and profit
- Carrying charges on improvements during construction--taxes, interest, insurance
- Legal expenses
- Usual sales commissions or costs and transfer fees required to place a building in the hands of the original consumer

All builders will incur all of the listed outlays in varying degrees. A person who builds fifteen homes per year may sustain a different dollar cost per house than the builder who constructs five hundred houses annually. Total costs are measured only when the property is sold in the marketplace; hence, the efficient builder enjoys a higher profit margin, and the less efficient enjoys a smaller one. The level of costs incurred by the hypothetical "typical" builder will be what the market recognizes and is willing to pay. In a sense the market will average total dollar costs of all builders, not necessarily to the extent that dollar costs were incurred, but only to the extent that the buying public is ready to pay. This measure is inherent in the application of the cost estimate for appraisal purposes.

In some cases a builder may avoid a cash outlay for a particular item. For example, a builder could use his own money to finance a construction project and avoid paying interest during the construction period. This does not mean that this cost has been eliminated; the builder will charge for the use of his capital when he sells his product.

Carrying charges on improvements during construction include only the amount of taxes, interest, and insurance during the period of construction. Interest or "points" on permanent financing are not a part of construction cost.

TIME AS A FACTOR IN COST

The term "as of a certain date" as it is used in defining replacement cost is an important element of this cost concept. Building costs during the past twenty years have been constantly in a state of change. An estimate of cost that is not representative of the date of the appraisal has little relevance to the market value of the property.

If cost data do not reasonably reflect the cost level at the time of the appraisal, they should not be used or should be adjusted to reflect this cost level.

LOCATION AS A FACTOR IN COST

The cost of building may vary as much as 30 percent throughout California. Just as out-of-date costs are not relevant to a market value estimate, costs that do not reflect the local price level are not appropriate and should be adjusted.

CHAPTER 3: METHODS OF COST ESTIMATING

Building costs may be estimated by any one of the four general methods defined below.

UNIT OF AREA OR VOLUME METHOD

This method of estimating replacement cost involves computing the number of square feet or cubic feet in the building, and then multiplying the area or volume by a proper unit cost. This procedure gives results that are reasonably accurate. It is also the fastest means of making cost estimates in a mass appraisal system. Furthermore, it is a method that is consistent with the concept of "replacement cost." Because of its suitability and ease of use, it is almost universally used for property tax appraisal purposes and will be discussed in detail later.

PLANE AREA OR IN-PLACE COST METHOD

A replacement cost estimate is made by this method by first estimating the in-place costs per square foot of all flat surfaces such as floors, walls, ceilings, or roofs and multiplying them by the areas of the respective surfaces. The next step consists of computing the volume of other components such as foundations or footings and multiplying it by an in-place cost per unit of volume. The total cost is the sum of these costs plus the in-place cost of components such as plumbing systems, electrical systems, cabinets, doors, etc. The in-place costs used should include all elements of cost, e.g., a pro rata share of general costs such as overhead, profit, and financing fees as well as labor and material costs. This method of estimating replacement costs is particularly applicable to certain "shell type" commercial and industrial improvements.

TRENDED HISTORICAL COST METHOD

The trended historical cost method is applicable to specialized industrial properties where the unit of area and the plane methods are not feasible. The cost of complex industrial plants can often be satisfactorily derived only from historical cost data or by a quantitative estimate. In the trended historical cost method, expenditures for each year that construction took place are factored to replacement cost as of the date of appraisal, using construction cost indices or conversion factors. Whenever possible, historical costs should be taken from official cost accounting records.

The historical cost method is not generally practical for the average residence or smaller commercial properties, not only because historical cost data are often difficult to obtain, but also because the actual cost of such properties tends to vary considerably when built by different contractors.

A careful analysis of historical costs is always valuable, however, as a check against replacement costs estimated by other methods. Therefore, all authentic historical cost data that can be obtained readily should be compiled.

QUANTITATIVE METHOD

The quantitative method of estimating current cost is generally used by contractors. The quantities of materials are determined and priced, and the amount of labor is estimated and priced. To the sum of these items are added proper overhead and other costs. This method is valuable for estimating or checking the cost of unusual types of properties and in setting the unit cost factors for the square-foot, cubic-foot, and plane methods. Experience in quantitative estimating and in actual construction work is necessary to use this method satisfactorily. The method's slowness makes it generally unadaptable to a mass appraisal system.

CHAPTER 4: STANDARD CLASSIFICATION SYSTEM

ASSESSOR'S STANDARD SYSTEM

The Assessor's Standard Classification System is a method of estimating basic building costs by referring to square-foot cost tables. Basic building costs are then augmented by in-place or square-foot costs of optional or extra components.

Components included in the basic square-foot costs vary with different building types. A listing of components that are included in each set of basic square-foot cost tables may be found in the four building cost manuals named on page 1 of this handbook.

GENERAL

In applying the square-foot method of cost estimating a square-foot cost is assigned to the building being appraised on the basis of comparison with new buildings with known costs. The premise is that the subject building would have the same square-foot cost as a similar new building.

A difficulty in applying this method arises in finding new buildings, with known costs for comparison, that are similar to the building to be appraised. Few buildings are exactly alike, and therefore few have the same square-foot cost. A further complication is the matter of deciding which known costs are representative or typical replacement costs.

The Standard Classification System is a means of estimating square-foot costs by systematically comparing the subject structure with structures whose costs are known. Buildings are classified according to variations in physical characteristics that cause square-foot cost differences. The classification of a building then serves as a reference in finding a proper square-foot cost from tables catalogued according to this system.

COST VARIABLES

The physical characteristics used as variables in the standard classification system are:

- Design type
- Construction type
- Quality class
- Shape class
- Area class

Descriptive words, letters, and numbers are used to designate a particular type or class for each of the five cost characteristics. They are assigned on the basis of standards or specifications set up in

the Standard Classification System. This means that any one building is assigned an overall classification and is identified by designations for each of these cost variables. Here is an example.

A building is classified as a single-family residence, D6A, with 1,450 square feet. "Single-family residence" refers to its design type; "D" to its construction type; "6" to its relative level of quality or quality class; "A" to its shape; and "1,450" is its square-foot size or area class. All buildings that have this classification will have approximately the same cost. To know the cost of one is to know the cost of all.

DESIGN TYPE

Buildings are first classified on the basis of the use for which they were designed. Square-foot costs of buildings may vary considerably for different design types. Two buildings may be alike in area, shape, quality, and type of construction but have different square-foot costs because one has the design-type features of a motel and the other those of a multiple-family residence.

There are four basic design types in the standard classification system:

- Residential
- Commercial
- Industrial
- Rural

A separate cost manual is available for buildings of each of these types.

Each basic design type has several subtypes. A subtype is used to select a specific square-foot cost. As an example, the residential subtypes are:

- Conventional single-family
- Modern single-family
- Multiple-family
- Motel

CONSTRUCTION TYPE

Construction type refers to the structural characteristics of a building. The letters A, B, C, D, and S are used to designate five different structural types recognized by the building trades. These types may be identified by the use of the following descriptions.

Class A Construction Type

Class A buildings have structural steel frames which are fireproofed by encasing them in concrete or by spraying them with fireproofing material. Floor and roof structures are built of reinforced concrete. Walls are filler or curtain type and may be built of brick, concrete, aluminum, glass, or

any other noncombustible material. Multiple-story office or hotel buildings are typical Class A buildings.

Class B Construction Type

Class B buildings have a framework built of reinforced concrete columns and beams. As in Class A buildings, the floor and roof structures are built of reinforced concrete and the walls are built of noncombustible materials. Typical Class B buildings are multiple-story office buildings, hotels, and stores.

Class C Construction Type

Class C buildings have masonry-type exterior walls. Floor structures may be built of wood frame or poured concrete. Roof structures are wood frame. The walls may be either a continuous bearing wall system or a pilaster and bond beam frame with a masonry filler or curtain wall. The masonry may be brick, tile, stone, or concrete, either poured in place or tilt-up. Interior partitions are usually wood frame. Class C buildings are usually restricted in height. They are used generally as stores, supermarkets, garages, and warehouses, and sometimes as offices or residences. Structural members may be wood or steel trusses, steel girders, or laminated wood beams.

Class D Construction Type

Class D buildings have wood-frame construction such as that generally encountered in residences. The frame is usually made of two-by-four vertical studs, spaced about sixteen inches apart, with horizontal top and bottom plates. The exterior finish or skin may be wood siding, shingle, stucco, masonry veneer, or sheet metal. Class D construction seldom exceeds three stories.

Class S Construction Type

Class S buildings are specialized ones that do not fit any of the above categories. Service station buildings are an example of Class S construction.

QUALITY CLASS

Quality class ranks buildings according to their amounts of materials, grades of materials, and workmanship. If two buildings are of the same design type, construction type, shape, and size, but one has more materials, or better materials, or both, it will have a higher square-foot cost. Also, if two buildings are exactly alike, except that one was built with greater care and skill, it will be of better “quality” and will have a higher cost.

Of the five choices that lead to the overall classification of a building, the choice of a quality class is the most difficult. The relative quality of a building is not as obvious as its design type, construction type, shape, or size. Many points of reference must be observed. Many parts of a building cannot be seen, and their presence and nature must be inferred.

The quality class designations are usually numbered from 1 to 10. A class 1 building is the least costly to build per square foot, and a class 10 is the most costly.

Detailed specifications of the features typical of each quality class can be found in the building cost manuals. The appraiser selects the quality class for a subject building by comparing the features that bear on quality with the quality features described in the specifications. He then selects the class that best describes the building being appraised.

Many times buildings have quality features that fall between those of two classes rather than being most like one or the other. For this reason half-class gradations are used. For example, buildings can fall in the 5.5 class, 6.5 class, etc. The unit cost of a class 5.5 is halfway between the cost of a class 5 and the cost of a class 6. A major problem facing the appraiser when selecting the quality class is deciding whether the variance from a particular quality level justifies a half classification. His decision requires sound knowledge of the comparative costs of building components or items.

AREA CLASS

Other things equal, the smallest building is the most expensive to construct per square foot of floor area, while the largest is the cheapest. There are three major reasons for this.

Ratio of Perimeter Wall Area to Floor Area

The ratio of the area of the outside wall to the enclosed floor area tends to decrease with increased building size. Larger buildings have a greater floor area over which to spread the costs of the wall. Here is an example, which assumes that the buildings are similar in all respects except size.

Building	Floor Area	Perimeter (Feet)	Perimeter Wall Cost at $15 Per Linear Foot	Wall Cost Per Square Foot of Floor Area
A	400	80	$1,200	$3.00
B	l,600	160	$2,400	$1.50

Though the larger building has a higher wall cost, there is proportionately more floor area over which to spread that cost.

Fixed Costs

There are many items that cost the same regardless of building size. The cost of these items will therefore be greater per square foot in a small building than in a larger one of the same class.

Good examples of fixed cost items are plumbing fixtures and kitchen cabinets in residences of the same class and the cost of transporting a crane to a job site for setting tilt-up panels. In both cases, these costs will be the same regardless of the area of the building; thus, the larger the building the lower the cost per square foot.

Quantity Buying

Builders typically receive quantity discounts on large orders of materials for large buildings and competition may force them to pass the saving on to the consumer. This discount should not be

confused with the quantity discounts that large-volume builders receive but may not pass on to the consumer in the finished product.

While costs per square foot do decrease with increasing building size, the decrease is most rapid at the lower end of the size scale and tapers off with increasing building size, eventually reaching a plateau. This can be demonstrated graphically and is noticeable in the square-foot cost tables.

Area classification is made simply by computing the area of the building. A square-foot cost is then selected from the proper table for this area.

Building areas to be included for area classification will vary with different design types. Specific instructions for computing area will be found in the several cost manuals.

SHAPE CLASS

The shape of a building can have an effect upon its cost. Buildings of the same design type, construction type, quality, and size will cost different amounts per square foot if they are of differing shapes.

The most economically shaped building is a square one. The greater the divergence from squareness, the greater the cost. There are three reasons for this.

Ratio of Perimeter to Floor Area

The greatest effect of shape upon cost is caused by the differing ratios of perimeter to floor area in buildings of different shapes. Given two buildings of equal size but different shape, the building with the more irregular shape will require more wall area to enclose it, and the wall cost per square foot of floor area will therefore be greater. Following is an example of two buildings, each with an area of 400 square feet and a wall cost of $15 per linear foot.

Buildings	Dimensions (Feet)	Perimeter (Feet)	Wall Cost	Wall Cost Per Square Foot of Floor Area
A	20 x 20	80	$1,200	$3.00
B	40 x 10	100	$1,500	$3.75

Number of Corners in a Building

The greater the number of corners in a building, the greater the cost. Additional costs of material are incurred when building around a corner. There is also a greater labor cost because more time and effort are required to build around a corner than to continue in a straight line.

"Cut-Upness" of the Roof

"Cut-upness" refers to the number of roof ridges, valleys, and hips and the manner in which the roof is "broken up." As the shapes of houses become more complex, their roof systems are more

cut-up. The more the roof is cut-up, the more the cost that must be absorbed by each square foot of floor area.

There are four shape designations: A, B, C, and D, with D the most irregular. Which designation is selected depends upon the interaction of the above three shape factors which influence cost. The ratio of perimeter to floor area is the most important influence, but its importance in the selection of the shape class can be modified by the other two factors.

Shape classification considerations vary with different building design types. Guides and instructions for shape classification of individual design types will be found in their respective building cost manuals.

CHAPTER 5: BASIC BUILDING COST ADJUSTMENTS

The standard classification system provides for adjustments of basic building costs for minor variations from standards set for particular building types. It may be necessary to adjust basic building costs for one or more of the following variable factors.

WALL HEIGHT ADJUSTMENTS

Basic square-foot costs are developed for buildings with definite wall heights. All residential and some commercial and industrial building types usually conform to standard heights. Many commercial and industrial buildings, however, have wall heights based upon the needs of the users. Basic costs shown in the square-foot cost table must be adjusted if the wall height of a particular building differs from the height upon which the square-foot cost tables are based.

BASIC WALL HEIGHTS

For those building types that may have variable wall heights, the height on which the costs are based is shown on the line below each series of square-foot cost tables.

WALL HEIGHT ADJUSTMENT TABLES

Wall height adjustment tables contain the cost of constructing perimeter wall one foot high per square foot of area enclosed by the perimeter wall. Adjustment amounts are shown for all floor areas included in the square-foot cost tables. These square-foot adjustment costs are to be added to or deducted from the basic square-foot cost for each foot of wall height variation from the basic wall height.

WALL HEIGHT MEASUREMENTS

Wall height measurements for the various levels of a building are found by measuring the distances shown in the following manner.

Upper Floors: From the top of the floor slab or floor joist to the top of the roof slab or ceiling joist.

Main or first floor: From the bottom of the floor slab or joist to the top of the roof slab or ceiling joist.

Basement: From the bottom of the floor slab to the bottom of the first floor slab or joist.

PERIMETER WALL ADJUSTMENTS

Square-foot costs include the cost of a perimeter wall as described in the applicable building specifications. If a portion of the exterior wall of a building is missing or is a part of the adjoining property, the in-place cost of that portion should be deducted from the basic building cost to

arrive at net building cost. A deduction of this type may arise out of one of the following situations.

COMMON OWNERSHIP OR JOINT OWNERSHIP DEDUCTIONS

When a portion of the exterior wall belongs jointly to adjoining properties, the total cost of any exterior finish included in the square-foot costs plus one-half of the cost of the structural portion of the wall is deducted from the basic building cost. Interior finish should be considered to belong to each of the separate properties.

NO OWNERSHIP DEDUCTIONS

When a portion of an exterior wall belongs to an adjoining property, the total cost of any exterior finish included in the square-foot costs plus the total cost of the structural portion of the wall is deducted from the basic building cost. Interior finish is still considered to be part of the subject building even though it is applied to a wall that is not part of the subject building.

MISSING WALLS

The total cost of missing portions of the exterior wall should be deducted from the basic building cost. In many instances, however, extra cost is occasioned by structural members that support the roof load and span the open area. If this is the case the net saving, if any, is computed by estimating the cost of the missing wall portion and deducting from this amount any extra structural costs resulting from the open area.

LACK OF EXTERIOR FINISH

Some building types such as banks have expensive exterior finish. Square-foot costs for these types usually include the cost of finish on all sides. Some of these buildings butt against adjoining buildings and do not have finish on portions of the exterior. If the building specifications include an exterior finish that is lacking, its cost should be deducted from the basic building cost.

FLOOR LEVEL COST ADJUSTMENT

Basic square-foot costs in the four cost manuals are applicable to basement, first-floor level, or second-floor level. Building costs tend to rise for floor levels above the second because of the increased cost of lifting materials. Square-foot costs for floor levels above the second level are estimated by using the appropriate second-floor cost and increasing it by 2 percent for each floor above the second; for example:

Third story—use second-story cost + 2 percent

Fourth story—use second-story cost + 4 percent

Fifth story—use second-story cost + 6 percent

SUPERIOR AND INFERIOR AREA ADJUSTMENTS

There are several methods of estimating proper square-foot costs for buildings with areas of different quality. The best method to use depends on the particular situation.

A COMPOSITE QUALITY CLASS

If the difference in quality is slight or there is no distinct dividing line between areas of varying quality, use a square-foot cost based on the building's average quality. For example, if a residence has D5 cost characteristics in certain areas and is more similar to a D6 in other areas, a D5.5 classification may be applicable. The total of all areas is used as the area for selecting a square-foot cost from a cost table.

SEPARATE QUALITY CLASSES

If two or more distinct areas are of a significantly different quality level, separate quality classes may be assigned to each area. In other words, the first-floor area may be classified as D6 quality, and the second floor may be classified as D5.5 quality. As in the case above, the total of all areas is used for selecting a square-foot cost from a cost table.

FRACTIONS

If a small but distinct area of the building, such as an addition or a residential porch, is of significantly different quality than the main area, its cost may be estimated by applying a square-foot cost that is based on a fraction of the square-foot cost of the main area.

When using fractions, the area used for area classification should include all areas with assigned costs that are greater than two-thirds of the square-foot cost of the main building.

HALF-STORY AREAS

Half-story areas are upper floors of buildings that have less than eight feet of ceiling height at the exterior wall line. The sloping roof makes up all or a portion of the exterior wall.

Half-story area costs are estimated by applying a fraction of the first-story square-foot cost to the half-story area. Suggested fractions for these areas are found on page 1 of AH 531.40, the Building Additive section of the *Residential Building Cost Manual*.

In selecting basic square-foot costs for buildings from a table, half-story areas are not included in the area used in selecting the basic building square-foot cost.

CHAPTER 6: ADDITIVE AND EXTRA COSTS

GENERAL

The cost components not included in the basic square-foot costs must be estimated and added as a lump sum to the basic building cost. These estimates may be made by reference to appropriate cost estimates in the four building cost manuals or from a data bank of locally gathered costs.

COST MANUALS

The four building cost manuals have various sections containing additive and extra costs.

BUILDING ADDITIVE SECTIONS

The Residential, Commercial, and Industrial Building Cost Manuals each contain a building additive section. These sections contain costs of items that are a part of or attached to buildings but are not included in the basic building costs. Examples of costs contained in them are: suggested fractions for half-story areas, residential porch costs, basement costs, and building equipment such as heating and air-conditioning costs.

YARD IMPROVEMENT SECTIONS

Each of the cost manuals contains a yard improvement cost section. These sections contain costs of items usually found outside of the main building. Typical yard improvements are fences, incinerators, sprinkler systems, and walls.

IN-PLACE COST SECTIONS

In-place costs are the total cost per unit, such as a square foot or cubic foot, of individual components or parts of a building. Each manual has a section which contains a series of applicable in-place costs. These individual costs can be used to build up square-foot costs or total costs of items or surfaces not included in the basic square-foot costs.

RESIDENTIAL GARAGE COSTS

AH 531, *Residential Building Costs*, contains a section on residential garage costs. The standard classification is also applicable for residential garage buildings. Quality classes for garages parallel those used for residences. A D6 garage will be essentially the same basic construction quality as a D6 residence. Garage specifications for quality classes from one to ten are shown, and appropriate costs can be found for attached, detached, and multiple-residential garages.

DISPLAY FRONTS

The square-foot cost tables for commercial stores and for shell-type suburban stores are unique in that the basic costs for the first story exclude the display front. All items pertaining to the store

front, such as the bulkhead, the glass, the back trim, the special display lighting, etc., are part of the extra cost items that must be added to the basic building cost to arrive at total building cost.

AH 532, *Commercial Building Costs*, has a section devoted to store display front costs. In this section costs are available in the form of cost per linear foot of bulkhead for certain typical fronts and in the form of in-place costs for the various components that make up a display front.

MISCELLANEOUS SERVICE STATION EQUIPMENT

The service station section of AH 532, *Commercial Building Costs*, includes all those costs of specialized service station equipment that is unique to service station properties. The cost of pumps, tanks, and all other service station equipment may be found in this section.

DATA BANKS

Each county should maintain a data bank of locally gathered costs. In many instances costs of additive components, such as air-conditioning systems, or of miscellaneous improvements, such as swimming pools, will vary radically from the Los Angeles base. Costs carefully gathered from local contractors are indispensable in this case.

CHAPTER 7: DEPRECIATION

DEFINITIONS

An essential part of the cost approach is the estimation of depreciation, and the usefulness of this approach depends greatly upon the appraiser's ability to make this estimate. This discussion is confined to the application of normal percent good factors to replacement cost new to arrive at replacement cost less normal depreciation. A more detailed discussion of depreciation may be found in Assessors' Handbook 501, *General Appraisal Manual*, beginning on page 54 (October 1968 edition).

PERCENT GOOD TABLES

Accrued depreciation is considered to be the difference between replacement cost new and current value.

Percent good is the complement of accrued depreciation. If accrued depreciation is 20 percent, percent good is 80 percent. The percent good concept is used because it saves one arithmetic operation in calculating replacement cost new less normal depreciation.

In a mass appraisal program, speed and uniformity in depreciation estimates are accomplished by the use of normal percent good tables. Percent good factors reflect the average loss in value that improvements suffer over time from normal or usual causes. They include normal physical deterioration and normal functional obsolescence, but they do not include value losses caused by unusual physical deterioration, unusual functional obsolescence, or economic obsolescence.

There are two types of normal percent good tables for structures in the cost manuals. They are designated as "R" and "OR" tables. "R" tables are generally applicable to residential-type buildings, and "OR" tables are applicable to "other-than-residential" buildings. For each of the two types there are a number of different tables for buildings with various life expectancies.

Individual tables are designated as type "R" or "OR," with a total life expectancy in years. For example, the proper table for a residential building with a 60-year total life expectancy is designated as "R-60."

AVERAGE LIFE TABLES

Average life tables direct the appraiser to the proper normal percent good table. This selection is based upon the following three factors:

- Use type
- Construction type
- Quality classification

Use type refers to the use that is currently being made of the improvement. It may or may not be the same as the original design type that the building cost is based upon.

Construction type and quality classification are based upon the same standards as those set forth in the standard classification system for these two building characteristics.

REMAINING LIFE EXPECTANCY TABLES

Remaining life expectancy tables are also included with the normal depreciation tables. These tables show a remaining life expectancy for an item at each age of its life. These tables are intended as general information for the appraiser and may or may not be applicable in a specific instance.

EXTENDED LIFE CONCEPT

The percent good tables in the four manuals incorporate an extended life concept. In this concept, percent good and remaining life expectancy are based upon the expectancy at any age of a surviving item of a larger original group. Thus, a given item that has a probable life expectancy of 60 years when new may have some remaining life, and therefore value, when it is 60 years old. This stems from the fact that the 60-year average life for the group is attained by the early retirement of some items and the later retirement of others.

EFFECTIVE YEAR

Two items must be known in order to select the proper normal percent good of a structure from the table, the average life and the age of the structure. The average life is obtained from the "average-life table," and the age is calculated by subtracting the **effective year** (see next paragraph) from the appraisal year. Normal percent good and remaining life can be found from the table by selecting the age in years from the age column and reading horizontally to the proper average life column.

In most buildings the effective year is the same as the year of construction. Changes in effective year should not be made unless a significant change has been made in the improvement. However, when a building has been remodeled or added to, or is not architecturally representative of its date of original construction, the effective year may differ from the actual year of construction.

The assignment of an effective year is an appraisal estimate rather than a mechanical calculation. Knowledge of architectural and functional characteristics of structures and the changes in these characteristics over time is the key to estimating the effective year of structures. These characteristics cause structures to fall into eras or age groups. Age groups may be identified by the appraiser, and a year that most nearly reflects the effective age of a structure is assigned.

REMODELING

Remodeling is the major reason for adjusting the effective year. Remodeling may be such that a building **appears** to be new. If this is the case, the effective year should be selected as if it were a new building. Usually, however, remodeling only partially cures functional obsolescence, and the effective year is therefore adjusted to a time somewhere between the original date of construction and the current year.

Remodeling certain portions of a building has a greater influence on the effective year than remodeling other portions would have. Remodeling the bathrooms and the kitchen of a house or the front of a store will have greater effect than remodeling of less-used or less-seen portions of these buildings.

Some remodeling may be classified as normal maintenance. The individual replacement of water heaters, a worn-out roof, new paint inside and out, etc., are not usually reasons for adjusting the effective year. A combination of these things could, if extensive enough, change the effective year. As a general rule the effective year should not be changed unless the remodeling has cured some functional obsolescence or has significantly cured some physical deterioration.

ADDITIONS

Additions may cause a change in effective year if the addition increases the overall utility of the improvement. If an addition modernizes the improvement, the effective year may be shifted forward. The addition of a family room, an extra bath, extra bedrooms, or a formal dining room to a residence could, individually or jointly, cause a change in effective year. On the other hand, the addition of a bedroom to a five-bedroom house or the addition to the rear of a store building that already has adequate depth would probably not change the effective year.

PHYSICAL CONDITION

While the value of a building may vary considerably with its condition, effective year changes are not generally made as a result of condition. Normal percent good computations are based on the assumption that the building is in average condition for its age.

While the condition of a building does have a significant influence on its value, the effective year is not generally changed for this reason because it is a temporary situation relative to total building life. Building conditions may vary considerably in a short period of time; for example, a building may be in poor condition one year, completely renovated the next year, and then allowed to deteriorate again. Effective year changes should be reserved for permanent situations.

Value differences due to physical condition should be considered in a step in the appraisal process that is subsequent to the computation of RCNLD.

MECHANICAL AIDS FOR ESTIMATING AGE

An average dollar age or average date of construction of buildings can be computed by weighting the current costs of the original building and of each subsequent addition or investment.

Example A:

Assume that the current replacement cost of the original portion of a building built in 1940 is $5,000 and that the RCN of an addition built in 1950 is $3,000. The mathematical process of arriving at a weighted age as of 1969 is as follows.

$5,000 x 29 (Age of Original Construction)	=	$145,000
$3,000 x 19 (Age of Addition)	=	57,000
$8,000		$202,000

Average age of construction: $202,000 ÷ $8,000 = 25 years

Example B:

Historical costs may be used in a similar manner. They must first be converted to current costs by use of cost index factors.

Year of Construction	Historical Cost	1969 Cost Index Factor	Cost Factored to 1969	Age (Years)	Weighted Dollar Years
1940	$3,150	3.87	$12,191	29	$353,539
1950	$2,000	1.70	$3,400	19	$64,600
			$15,591		$418,139

Average age of construction: $418,139 ÷ $15,591 = 26.8 years.

These methods are, at best, only guides. Additional capital outlays on a building may not change its architectural or functional characteristics in proportion to the amount of the outlay, or they may not change these characteristics at all. In the final analysis the estimation of an effective year is dependent upon the appraiser's knowledge and judgment. At best an average age of construction tends to set the latest year that should be assigned for effective age.

CHAPTER 8: RESIDENTIAL BUILDING RECORD

The primary purpose of the Residential Building Record is to accommodate all of the information and computations necessary to describe and make a cost estimate of the residential structures located on a particular parcel.

Buildings are described in three ways. Some of the items and materials that are found in a house are printed on the record and merely require "*x*'s" to indicate their presence. Some require a short written description. Some of the cost items are noted on the record by **rating** them as to their quantity and quality because this is the best way to describe them.

Abbreviations are used extensively in filling out the building record. A suggested list of abbreviations may be found in AH 531.80, page 1.

RECORDING INTERIOR DETAIL

The first step in a residential property appraisal is to contact the occupant of the subject building. If an adult is present and agrees, an inspection of the interior of the house should be made at this time. A description of the interior of the house is recorded in whatever sections of the Residential Building Record are needed. These nine sections are located in the upper right area of the front of the Residential Building Record.

ROOM AND FINISH DETAIL

ROOM AND FINISH DETAIL									
ROOMS	FLOORS				FLOOR FINISH		TRIM	INTERIOR FINISH	
	B	1	2		Material	Gr.		Walls	Ceilings
Typical		*X*							
Ent. Hall									
Living									
Dining									
Family									
Bed									
Bed									
Utility									
Kitchen									
Drain Bd.	Material:					Lgth: Ft.		Splash:	

Figure 1

Typical Line

The spaces following the word **typical** are usually filled out first. The appraiser, after gaining entry, should make some quick observations of the floor, wall, and ceiling finish. He does this by

glancing down the hallway and into the living room or any other rooms immediately noticeable. This may be sufficient to describe the typical room finish.

Floors

If the house has a single story, an "*x*" is placed in the square directly under "1." The typical finish detail is then entered on that line.

ROOM AND FINISH DETAIL									
ROOMS	FLOORS				FLOOR FINISH		TRIM	INTERIOR FINISH	
	B	1	2		Material	Gr.		Walls	Ceilings
Typical		*X*	*X*						
Ent. Hall									
Living									
Dining									
Family									
Bed									
Bed									
Utility									
Kitchen									
Drain Bd.	Material:					Lgth: Ft.		Splash:	

Figure 2

If the house has a second story and its typical room finish is the same as that of the first floor, an "*x*" is also marked in the space under "2" on the same line. (Figure 2)

ROOM AND FINISH DETAIL									
ROOMS	FLOORS				FLOOR FINISH		TRIM	INTERIOR FINISH	
	B	1	2		Material	Gr.		Walls	Ceilings
Typical		*X*							
Typical			*X*						
Ent. Hall									
Living									
Dining									
Family									
Bed									
Bed									
Utility									
Kitchen									
Drain Bd.	Material:					Lgth: Ft.		Splash:	

Figure 3

If the typical finish on the second floor is different from that of the first floor, an "*x*" should be entered at the next line under "2" and a separate description given on that line. (Figure 3)

If a house has more than two stories, the third column under floors should be used to designate floor levels above the second. The principle outlined for the second-floor level should be observed. Finally, this column should be headed with the number of the uppermost level to which the description is applicable.

Typical Floor Finish

The typical floor material (which may be carpeting) is described and rated as to grade. The rating depends upon whether the material is fair, average, or good.

Typical Trim

The type of trim material is then described. Rating is not necessary.

Typical Wall and Ceiling finish

The walls and ceilings are described in a similar manner.

Other Interior Room And Finish Description

The succeeding entries allow for a count of the rooms in the appropriate boxes in the proper floor column. They also provide space to describe any floor, wall, or ceiling finish that varies from the finishes described in the typical column.

For example, if there is an entry hall, the estimator places a “1” in the square located in the first-floor column, the “1” refers to the number of a given type of room being described. If the entry hall finish is the same as the “typical” finish, there is no need to describe it further. If only the floor finish varies from the “typical,” then only an entry under floor finish is necessary.

ROOM AND FINISH DETAIL									
ROOMS	FLOORS				FLOOR FINISH		TRIM	INTERIOR FINISH	
	B	1	2		Material	Gr.		Walls	Ceilings
Typical		*X*			*CPT.*	*A*	*OP*	*SR & PT*	*SR & PT*
Ent. Hall		*1*			*VIN. T1*	*A*			
Living		*1*							
Dining		*1*							
Family		*1*			*VIN. T1*	*A*		*Wd PNL*	
Bed		*2*							
Bed		*1*						*SR & PA*	
Utility									
Kitchen		*1*			*VIN. T1*	*A*		*SR & PA*	*SR & EN*
Drain Bd.	Material: *T1*					Lgth: *16* Ft.		Splash: 16" *T1*	

Figure 4

The same procedure is followed when counting and describing the living, dining, family, and utility rooms and the kitchen. There are also blank spaces for any additional rooms.

Two lines are provided for bedrooms. Bedrooms that are finished in a similar manner may be described together. If one or more has a different finish, it may be entered on the second line or on a blank line.

In the example above, the first two bedrooms are of the same finish as noted in the "typical" column. The third bedroom is neither typical of the room's finish in this house nor like the other two bedrooms. Its floor and wall finish should be described.

Drain Board

The type of drain board material should be entered after the word "material," and the length of the drain board should be estimated and entered after the word "length." The drain board length is a measurement of all the base cabinets in the kitchen, including the sink.

After the word "splash" the type of material that the splash is made of should be noted and the height of the splash above the drain board should be estimated and entered. (Figure 4)

BATH DETAIL

The "F1" in the first column of the bath detail refers to the floor level or levels on which the baths described on each line are located.

The "No." in the second column refers to the number of identical baths that are described on each line. A description of one bath is sufficient. Dissimilar baths are described on separate lines.

The finish columns call for a description of the floor material and wall finish.

BATH DETAIL												
		FINISH		FIXTURES					SHOWER			
Fl.	No.	Floors	Walls	Wc	La	T	Type	Grade	St.	O.T.	G.D.	Finish
1	*2*	*LINO*	*SR & EN*	*1*	*1*	*1*	*M*	*A*	*1*		*1*	*T1*

Figure 5

The fixture columns are for fixture count. The count is of the number of fixtures in **one** bath regardless of the number of identical baths being described. "Wc" refers to toilet; "La" refers to wash basin; and "T" refers to bathtub.

The example above indicates that the house has two baths on the first floor, each with one water closet, one lavatory, one tub, and one stall shower with a glass door. The stall shower has a tile finish.

If each bath had two lavatories, then the number "2" would have been recorded. This would state that there are 4 lavatories in the house.

Entries for the "Type" column can be either "Modern" or "Old." The grades are fair, average, or good.

Shower detail calls for the number of each type found in one bath. "St." refers to stall shower, "O.T." refers to over-tub shower. "G.D." refers to glass door. The finish material is listed, and the extent is noted. The height of the finish is estimated from the floor of the shower or the top of the tub. (Figure 5)

SPECIAL FEATURES

Special features are items of equipment that are important in the cost makeup of the house and have not otherwise been provided for on the record.

SPECIAL FEATURES							
X	Oven	*X*	Fan		Intercom		
X	Range	*X*	Disposal	*X*	Pullman *2*		
X	Hood		Dishwasher	*X*	*Planter*		

Figure 6

Several items, mostly built-in appliances, have been listed in the section. If one of these items is in a house, an "*x*" is placed in the square in front of the item. Several empty spaces have been left for writing in any other features considered to be "special." (Figure 6)

HEATING

Heating systems are described in the section illustrated below.

HEATING			
X	Cent.	X	Force
	Wall		Grav.
	Floor		Perim.
	Bs.Bd		Elect.
	H. Pump		

Figure 7

The words and abbreviations in this section are explained as follows:

Cent. refers to a central ducted system.

Perim. refers to a central ducted system with ducts in the floor around the perimeter of the house.

Bs. Bd. refers to base board electric heat.

H. Pump refers to heat pump or a heat exchange unit that provides heating and cooling.

Force refers to a system of moving the air mechanically.

Grav. refers to hot air rising through a central distribution system with no added force.

Wall and **Floor** units are noncentral but may be further described as dual when serving two sides of a partition.

Blank spaces may be used to add items such as thermostat, heating unit capacities, number of ducts, etc. (Figure 7)

COOLING

Cooling systems recorded here are either refrigerating or evaporative type. The dual-purpose heat pump is recorded under heating. Units are either centrally ducted or wall installed. They are described in a manner similar to heating unit descriptions.

Evaporative coolers located on the roof with only one or two downdrafts should be listed as **central**, but the installations would be rated as **economy**.

An estimate of the cooling system capacity should be noted in the blank space at the bottom. (Figure 8)

COOLING			
	Cent.	*X*	Refr.
X	Wall *2*		Evap.
	Roof		
1 Ton			

Figure 8

FIREPLACE

If a house has a fireplace or fireplaces, an "*x*" should be entered in the square below fireplace. The two blank lines may be used to describe the fireplace briefly. (Figure 9)

FIREPLACE	
X	*Blt.up Hearth*

Figure 9

WIRING

The type of wiring is indicated by placing an "*x*" in the correct square.

WIRING			
X	Cable		K&T
	Conduit		
X	220		
	Poor		Spec.

Figure 10

K&T refers to knob and tube. It is usually found only in older homes that have not been rewired.

Cable refers to nonmetallic sheathed cable. This is generally the most prevalent type of residential wiring. (Figure 10)

Conduit refers to rubber-insulated wires that are run through a metal casing or tube.

Another type of wiring, seldom found in residences, is **armored steel cable**.

220 refers to special circuits of heavier wire that are installed for ovens, ranges, dryers, and some cooling units and sometimes for power equipment.

The wiring system is rated **poor** and **special** only if it varies greatly from what can be expected for a house of the same general age and quality. (Figure 10)

ELECTRICAL FIXTURES

This section is used to call attention to unusual situations relative to electrical fixtures or outlets. The first column requires rating the quantity of the light fixtures and electrical outlets. The rating

will be either **few** or **many**. If the fixtures are what could be expected of a house of the same general age and quality, no rating is necessary.

LIGHT FIXTURES			
	Few		Econ.
	Many		Spec.

Figure 11

The second column calls for a quality rating of the fixtures, which are either **economy** or **special.** If the fixtures are average, no rating is necessary.

There is an extra space where special items can be noted.

PLUMBING

These entries refer to the plumbing fixtures that are not otherwise covered in the kitchen or bath details. (Figure 12)

PLUMBING	
X	Water Heater
X	Sink *Stain Stl.*
X	Laundry *Auto.*

Figure 12

An "*x*" should be placed before the word **water heater**, and, if the capacity can be estimated without great difficulty, it can be noted.

An "*x*" should be placed before the word **sink**, and descriptive detail may be noted behind or below it.

An "*x*" before **laundry** can further be explained by adding the word **tray** if a laundry tray is present or **auto** if there is an automatic washer outlet only.

Having finished recording the information observed from the inside of the house, the appraiser makes his exit and prepares to record the observations that he will make on the outside.

RECORDING EXTERIOR DETAIL

Once outside the house, the appraiser records a description of the exterior of the building in the sections of the building record with the eleven headings listed below. These eleven sections are found in the upper left portion of the front of the Residential Building Record.

The section on the record headed **Class** and **Class and Shape** will not be filled in at this time.

STORIES

The first thing that the estimator should note is the number of stories or levels. If it is a split-level house, this should also be noted.

STORIES
1

Figure 13

DESIGN AND USE

The **design type** refers to the original intended use. **Use type** refers to its present use.

The design type is one of the factors that results in the overall classification of the building. It helps guide the estimator to the correct unit cost.

Use type leads the appraiser to the proper average life table from which he will select the percent good.

A residential building is either a single, a multiple, or a motel. If it is a single, it must be further identified as conventional or modern (AH 531 explains the difference between conventional and modern). If it is a multiple or a motel, the number of units should be entered on the bottom line.

DESIGN		USE
X	Single	*X*
X	Convent.	
	Modern	
	Multiple	
	Motel	
	Units	

Figure 14

CONSTRUCTION

This is a rating of the basic structural quality of the building.

CONSTRUCTION	
	Substandard
X	Standard
	Above-Stand.

Figure 15

The rating is a general one that may be made by comparison with the following:

Substandard

Does not meet construction standards for FHA or most city and county building codes, but may meet some minimum county building codes.

Standard

Meets FHA standards and all city and county codes.

Above Standard

Usually applies only to luxury type homes, possibly starting at the 9 quality class.

FOUNDATION

If the foundation is either concrete, brick, or another listed material, an "*x*" is placed in the correct space. If it is some other material, it may be described in an extra space.

Wood refers either to a simple mudsill separating the house from the ground or, perhaps, a creosote-treated railroad tie.

Piers refer to spaced perimeter supports and not to the inside joist or beam supports. The type of material, such as brick, concrete block, or wood posts should be entered.

FOUNDATION			
X	Concrete		
	Brick		Wood
	Piers		
X	Reinforced *E*		
	Hillside		
	Light		Heavy

Figure 16

If the foundation is **reinforced**, this should be noted with an "*x*." If the appraiser thinks it is, but is not sure, he should place the letter "*E"* for estimated behind the word "reinforced." (Figure 16)

If the foundation does not have a footing or is obviously flimsy or inadequate, mark it as **light**. If it obviously has been strengthened above standard, then mark it as **heavy.**

Hillside construction is entered because in many cases the cost of building a foundation on a slope exceeds the foundation cost included in our basic building costs.

STRUCTURAL

An "*x"* before **frame** indicates that the wall is typical 2" x 4" vertical-studded. It is not necessary to note board size or spacing, although the grade of lumber, supports, headers, and workmanship should be observed.

Write in **single wall** or **box** under frame when the exterior finish is acting as the structural support along with the corner posts and plates.

One place to observe **sheathing,** as well as the frame, is from the inside of an unfinished attached garage. Sheathing acts as a support or nailing surface for the exterior finish. It also serves to strengthen and insulate the wall. The type of sheathing material should be entered below the word "sheathing." It could be solid boards, spaced boards, gypsum board, fiberboard, or plywood.

STRUCTURAL	
X	Frame
X	Sheathing *L.W.*
	Block
	Brick
X	Floor Joist
	4 x 6 - 48 OC
X	Sub Floor
	T & G
	Conc. Floor

Figure 17

Rather than using sheathing, many times **line wire** is used on houses with a stucco finish. The stretched line wire prevents the stucco and paper backing from bowing in and also strengthens the wall. (Figure 17)

If the wall is masonry, the type of material should be indicated. If the building has a wood floor system, "*x*" **floor joists.** The dimensions and spacing may be entered on the line below. If there

is a **subfloor**, an "*x*" should be entered and the type of material may be indicated in the blank space below.

A space is provided to indicate a concrete slab floor.

INSULATION

There are separate spaces for insulated ceilings and for insulated walls. The best way to find out if the house is insulated is to ask the occupant.

INSULATION			
X	Ceiling	*X*	Wall

Figure 18

EXTERIOR

The exterior section is used to describe the outside wall finish material.

The prevalent material for each of the four sides of the house is to be checked. Stucco, siding, and brick are listed. Put any other material or necessary descriptive data on a blank line.

If the entire house is stuccoed, place an "*x*" in each of the four spaces opposite the entry for **stucco.**

If only the front is shingle and the other three sides are stucco, an "*x*" should be placed opposite **shingle** under the "front" column. *X*'s should be placed in each of the other columns opposite **stucco.**

- "F" column stands for "front"
- "L" column stands for "left side"
- "R" column stands for "right side"
- "B" column stands for "back"

The exterior is described as though the appraiser were standing in front of the house and facing it.

EXTERIOR				
F	L	R	B	
	X	*X*	*X*	Stucco
X				*Shingle*
				Siding
				Brick

Figure 19

WINDOWS

Windows are classified as being either double-hung, casement, or sliding.

WINDOWS			
X	Metal		Wood
X	Sliding		D.H.
	Casement		
	Few		Econ.
	Many		Spec.

Figure 20

A **double-hung** window is almost universally found in older houses. Its two sections open and close by sliding up and down.

Casement windows may be stationary or opening. They may have either wood or metal sash. The metal sash opens out with a crank and may be either of steel, which is painted, or aluminum.

Sliding windows are the type commonly found in newer houses. They usually have an aluminum sash.

The appraiser should note the type of window and indicate whether it has a wood or metal sash.

Windows are collectively rated as to their number and quality. The quantity is either few or many. The quality is economy or good. If the quantity and/or quality is average for the general quality class and age group of the building, no rating is necessary.

ROOF TYPE

Houses usually have a roof of a type or a combination of types such as those listed below. (Figure 21)

ROOF TYPE			
	Gable		Hip
	Flat		Shed
	Dormers		
X	Rafters *2x6-24*		
X	*Gutters*		

Figure 21

Dormer refers to a second-story window that seems to grow out of the roof. When the dormer actually contributes to the second-floor area, its cost is considered in the fraction applied to the second floor. Some dormers are only decorative and do not contribute to a floor area, but they should be considered when selecting the quality class.

An estimate of the width of the overhang and the type of eaves may be entered in a blank space.

The rafters' size and spacing may be recorded, keeping in mind, that, often, heavier rafters may actually have less bracing and cost no more.

Gutters may be entered in a blank space. If they are located at all eaves, the word "full" should be added; if they are located only over entrances, the word "few" should be added.

ROOF PITCH

Roof **pitch** refers to the ratio of the rise to the span. The pitch is recorded as low, medium, or high. Anything less than a 4-in-12 rise is a low pitch. A rise between 4-in-12 and 12-in-12 is a medium pitch, and anything over a 12-in-12 rise is a high pitch.

ROOF PITCH			
	Low	*X*	Med.
	High		

Figure 22

ROOF COVER	
	Shingle
X	Shake
	Tile
	Compo.

Figure 23

ROOF COVER

The proper roof cover should be noted with an "*x*" before shingle, shake, tile, or composition. A blank space is provided for types of roof covers not listed. More descriptive words may be added to the listed types of roof covers.

CONSTRUCTION RECORD AND NORMAL PERCENT GOOD SECTIONS

These two sections of the building record form a brief history of the building. Changes may be made in this section if there is additional construction or if subsequent appraisals are made. These sections are located in the center and on the left side of the front of the Residential Building Record.

CONSTRUCTION RECORD

The building permit number, type of improvement, historical cost, and year of construction are recorded here. A separate line is used to record this information for each year that there is an investment in construction.

If the date of construction is estimated, an "*E*" should be entered after the date.

If the cost is a confirmed amount, an asterisk should be entered following the amount. If an asterisk is not used, it is assumed that the cost is the amount shown on the building permit.

CONSTRUCTION RECORD				EFF. YEAR	APPR. YEAR	NORMAL % GOOD			
Permit		Amount	Date			Age	Remaining Life	Table	%
No.	For								
10001	*Const.*	*10,000*	*1954*	*1954*	*1960*	*6*		*R60*	
2222	*Add.*	*4,000*	*1960*	*1954*	*1970*	*16*		*R60*	

Figure 24

EFFECTIVE YEAR

The effective year should be reestimated following each additional investment in construction. The lastest effective year is recorded on the same line that the last investment in construction is recorded.

APPRAISAL YEAR

The assessment roll year that the property is appraised is entered in the column headed **APPR. YEAR.** A separate line is used for each appraisal.

NORMAL PERCENT GOOD

The four columns under the heading **NORMAL % GOOD** are used to record the age, the indicated remaining life, the normal percent good table used, and the percent good of the structure. All four of these items are listed on the line where the current appraisal year is recorded and are updated with each appraisal.

The age of the structure is found by subtracting the effective year from the appraisal year.

Remaining life is found in the remaining life column of the proper normal percent good table.

Table is the designation of the proper normal percent good table selected from the average life table.

Percent Good is the number found in the percent good column of the proper table.

RATING

Residential-type buildings are rated for the following factors:

- Interior and exterior condition
- Workmanship
- Cupboard and closet storage space

The rating standards are fair, average, or good and are designated by the letters "F," "A," and "G."

RATING (F.A.G.)				
Condition		Work-man-ship	Storage Space	
Int.	Ext.		Cupbd.	Closet
A	*A*	*A*	*A*	*A*

Figure 25

INTERIOR AND EXTERIOR CONDITION

The condition of a house may have an influence on its value over and above that indicated by the normal percent good factor employed.

If the interior or exterior condition of a house is better than that of other houses of similar quality and age to the extent that its value will be greater than the replacement cost less normal depreciation, one or both of these items should be rated good.

If the interior or exterior condition is so poor that it is estimated that the house's value will be less than the amount indicated by the replacement cost new less depreciation, one or both of these items should be rated fair.

An average rating indicates that no adjustment should be made in the replacement cost new less depreciation for condition.

WORKMANSHIP

The quality of workmanship has a significant effect upon the cost and value of a residence. It should be assumed that a sloppy job will cost less, take less time, and contribute less value than a good job.

If the workmanship on a house is such that it is of a higher quality than the majority of houses with similar quantities and quality of material, workmanship should be rated good.

If workmanship does not significantly affect the class relative to material quality and quantity, it should be rated average.

CUPBOARD AND CLOSET STORAGE SPACE

Houses with large amounts of cupboard or closet space cost more than similar houses with small amounts of these components.

If a house has an amount of cupboard or closet space that exceeds the amount generally found in houses of comparable quality, so that a significant increase in cost can be expected, one or both of these items should be rated good.

If there is less cupboard or closet space, so that it is reasonable to assume that the cost is significantly lower than for other houses of the same general quality, one or both of these items should be rated fair.

If there is a normal amount of cupboard and closet space, these items should be rated average.

MEASURING AND DIAGRAMMING

The next step is to measure and diagram the building. A diagram is made showing the house, porches, garages, and any other significant plot plan features. This enables the appraiser to compute the area of the house, to select its shape, and to compute the area of any other components to which a square-foot cost is to be applied.

BASIC PROCEDURES

Usually measurements are begun at the left front corner of the building and proceed counterclockwise around the house. Measurements may be recorded as dots or angles properly located on the grid. When the house is completely measured, the dots or angles are tied together with ruled lines to form an outline of the house.

Measurements are made and plotted to the nearest foot rather than fractions of a foot. The scale of the diagram should be one inch to ten feet except when the house is too large to fit on the grid at this scale.

The front of the house usually faces the bottom of the page (Figure 26). Some houses must be turned to face the computation section in order to fit the grid. Fireplaces are shown in their approximate location by a rectangle crossed in the middle.

UPPER FLOORS AND BASEMENTS

The following color code is used to show the various floor levels:

- Main floor - black line
- Second floor - red line
- Third floor - blue line
- Basement - green line

If a first and a second, third, or basement wall fall on the same line, the second-floor line is drawn inside the first-floor line, the third-floor line is drawn inside the second-floor line and the basement line is drawn inside any upper-floor line.

PORCHES AND INFERIOR AREAS

Porches are drawn with broken lines. If there is a porch on the second floor, it is drawn with a broken red line.

Areas such as porches, inferior additions, and restricted upper floors whose costs per square foot are a fraction or percentage of the cost per square foot of the main residence should have that fraction noted and circled in the proper color on the diagram.

A description of the type of porch involved should be indicated on the sketch of the building plan. It can be noted by the use of the following symbols:

C	Concrete Floor	U.P.	Uncovered Porch
W	Wood Floor	C.P.	Covered Porch
B	Brick Floor	S.P.	Screened-in Porch
F	Flagstone Floor	G.P.	Glassed-in Porch

Example: C - CP = Concrete Floor, Covered Porch

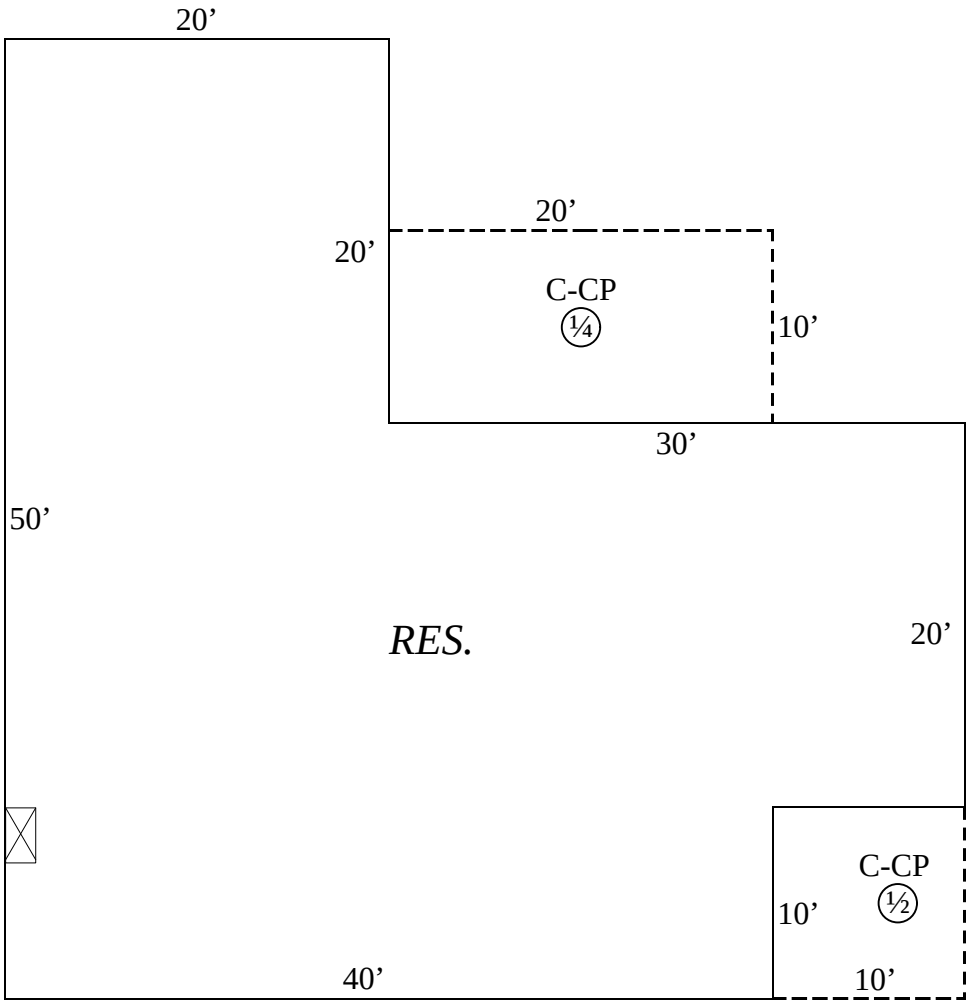


Figure 26

DIMENSIONING

The dimensions for the residence should be placed on the outside of the diagram except where a line is broken by an intersecting line as is the case in the 20,’ 30,’ and 40’ lines in Figure 26. Dimensions for upper floors and basements are shown on the inside of the diagram. Dimensions are shown in the same color as the wall lines for the respective floor levels.

MISCELLANEOUS BUILDINGS AND YARD IMPROVEMENT SECTIONS

These two sections, at the upper left side of the back of the building record, are used to describe structures and other improvements that are not part of the main building. Typical miscellaneous buildings are detached garages, sheds, and shops. Yard improvements include masonry flatwork, fences, garden walls, and sprinkling systems.

If miscellaneous buildings detached from the main residence are simple rectangles, there is no need to draw them on the grid; recording their dimensions is sufficient description. Irregularly shaped buildings should be drawn on the grid.

When there are many miscellaneous improvements or it is reasonable to apply a significantly different percent good factor to an item, a Miscellaneous Building Record should be used.

MISC.BLDG.	FOUND	CONS.	EXT.	ROOF	FLOOR	INT.	SIZE, ETC.
GAR	*CONC.*	*FR.*	*STC*	*GAB. SHK*	*CONC.*	*UNF.*	*19 x 25*

YARD IMPS.	CONSTRUCTION	SIZE, ETC.
FLAT	*4" CONC.*	*400* ⌑
FENCE	*6' SOLID BD. 4 x 4" posts 8' OC*	*70'*

Figure 27

AREA COMPUTATION SECTION

The section headed **computations** in the center of the left side of the back of the building record is used to compute the square-foot area of all buildings and porches. Computations of the area of miscellaneous yard improvements such as flat work need not be shown.

Uniform procedures for computing building areas are desirable when this is possible. It is important that a person reviewing the appraisal be able to check the building area computations quickly and accurately.

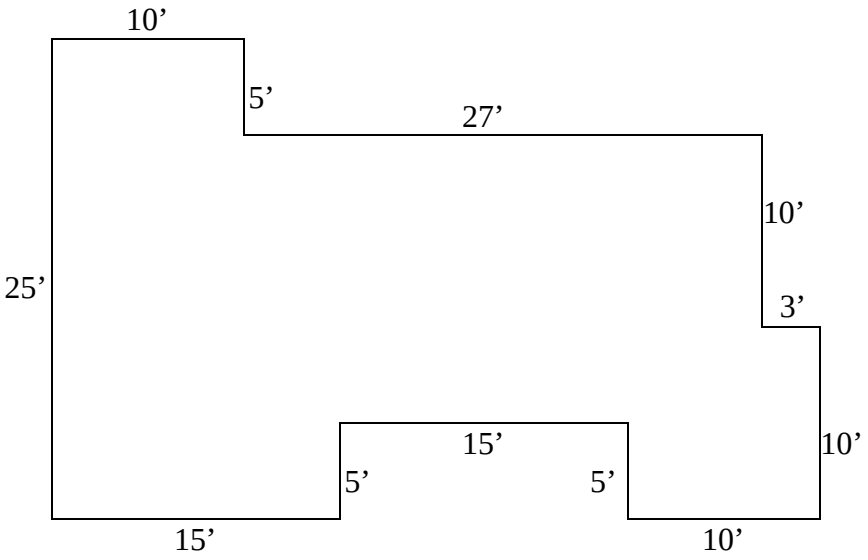
RECTANGULAR BUILDINGS

Rectangular building areas are computed by dividing the building diagram into a series of rectangles, computing the area of each rectangle, and finding the sum of all the areas.

Rectangles are formed by starting at a point which is the extreme left of the lowest horizontal line on the drawing. The base of the first rectangle is a horizontal line between the point of beginning and the intersection of the first vertical line to the right. The altitude of this first rectangle is the distance between the base line and the next intersecting horizontal line above.

After eliminating areas previously formed into rectangles, this process is repeated until all areas have been formed into rectangles.

In listing dimensions the horizontal distance is always listed first.



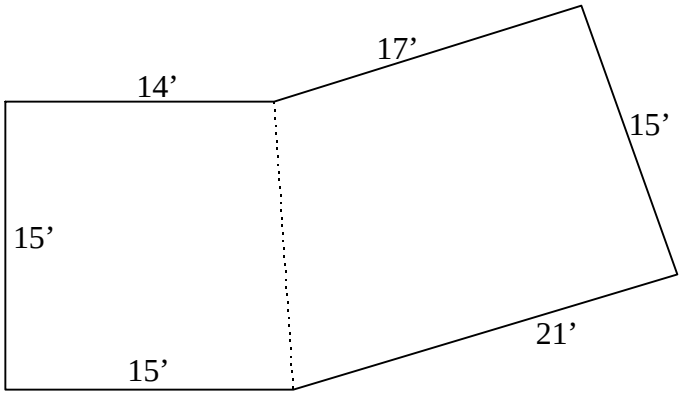
COMPUTATIONS	
RES.	
15 x 5 = 75	
10 x 5 = 50	
40 x 5 = 200	
37 x 10 = 370	
10 x 5 = 50	
745	

Figure 28

ANGULAR BUILDINGS

Angular buildings are so variable that a uniform method of area computation is not feasible. Areas of these buildings are computed by dividing the diagram into a series of geometric shapes. The area of each of these segments is computed, and the areas of all parts are summed.

The best procedure for computing angular building areas is one that produces the simplest and most clear-cut division of the building area. Care should be taken to insure that a reviewer is able to follow each step of the calculation and that all areas are included.



COMPUTATIONS	
$\frac{15 + 14}{2} \times 15 = 218$	
$\frac{21 + 17}{2} \times 15 = 285$	
503	

Figure 29

ORDER OF COMPUTATION

Areas are computed in the same order that they will be listed in the cost computations section on the front of the sheet. Each area of the building is labeled in the same manner that it is labeled on the grid. Fractions are always shown to aid in identification of individual areas.

It is important that all dimensions and totals be listed in columns and that a uniform procedure be used to set up computations. This principle is illustrated in the example in Figure 32.

CLASS AND SHAPE

The assignment of a class and shape is deferred until this time because it is necessary to consider and record all pertinent data before making these decisions. The space for recording this information is found on the upper left side of the front of the building record.

Class and shape are designated in the following order:

- Construction type
- Quality classification
- Shape classification

CLASS & SHAPE
D 6.5 B

Figure 30

More than one class may be assigned to a building if two or more distinct areas are of different construction type or quality class. This is done by showing both classes. It is important to designate the area in each class.

REMARKS

The remarks section in the lower left side of the back of the building record is used for any notes that are an aid in describing improvements. Each entry should be initialed and dated.

REMARKS
Quality of family room add is
superior to basic area - Reflected in
Quality Class selection. J.B. 6/5/70

Figure 31

COST COMPUTATION SECTION

The section headed **COMPUTATION** in the lower portion of the front of the building record is used for computing the replacement cost new less depreciation. This section provides for eight computations of this amount.

The top line is for entering the appraiser's name or initials and the date of the appraisal. The appraisal is signed or initialed and dated each time a new RCNLD is computed.

The column headed **Unit** on the left side of the page is for listing all areas and components to which costs must be applied to arrive at total replacement cost. These items are listed in the following order:

- Main floor area
- Additions to the main floor area
- Upper floor areas
- Basements
- Porches
- Building additives and extra components
- Outbuildings
- Yard improvements

COMPUTATION									
Appraiser and Date		*J.B. 6/5/70*							
Unit	Area	Unit Cost	Cost	Unit Cost	Cost	Unit Cost	Cost	Unit Cost	Cost
RES.	*1520*	*10.00*	*15,200*						
CCP ½	*40*	*5.00*	*200*						
F.P.	*1*		*450*						
HEAT	*1520*	*.50*	*760*						
COOL	*2*	*350*	*700*						
GAR.	*475*	*4.20*	*2000*						
C. FLAT	*400*	*.50*	*200*						
FENCE	*70*	*1.80*	*130*						
TOTAL			*19,640*						
NORMAL % GOOD									
RCNLD									

SBE-DAS AH-530A 1971

Figure 32

The column headed **Area** is for entering the area or number of units in the building or component. It is rarely necessary to identify the unit, for it will usually be obvious. For example, in buildings, the unit will always be square feet; in fences or walls, the unit will always be linear feet; etc.

The next two columns headed **Unit Cost** and **Cost** are repeated eight times to allow the use of the record eight times.